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Monthly Statistical Report

Prepared by the Statistics Department

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ESTIMATED U.S. PETROLEUM BALANCE

SUMMARY

Total domestic products supplied rose 333 MBD, about 2.3%, above last February's level. This year-to-year increase is slightly more than half the increase in the fourth quarter of 1983. It reflects some drawdown in non-primary inventories after the large build in January as well as warmer-than-normal weather.

Crude production fell 79 MBD (0.9%) from year-ago levels, the result mainly of a decline in lower 48 production. Imports again exceeded year-earlier levels; however, last February's imports were unusually low, reflecting uncertainty about the timing and degree of impending oil price reductions. Inventories rose about 24 million barrels this February, a counter-seasonal development.

The average number of active rigs fell by about 7% from last month's level, seasonally adjusted, but is almost 11% above last February. The number of wells reported drilled in February is not yet available.

PRODUCTS SUPPLIED^{1/}

Gasoline

Gasoline was supplied at 149 MBD (2.5%) above year-earlier levels. But last February's deliveries were depressed due to concerns about future prices. Thus, this February's deliveries were about 200 MBD below actual consumption, indicating that the January increase in non-primary storage has been "worked off".

Gasoline prices moved in a very narrow range, rising almost 1¢ from mid-January to mid-February, but erasing about half the advance during the last two weeks of the month. Real gasoline prices are about 2¢ above last year, including the 5¢ per gallon increase in federal taxes, effective 4/1/83, and the more-than-1¢ increase in state and local taxes. Real disposable income has also continued to rise, posting an advance of 5.3% between December 1982 and December 1983. The combination of higher disposable income, relatively stable gasoline prices, and a generally-improving economy has added some 200 MBD to gasoline demand over the last year.

Unleaded's share of the gasoline market rose to 59% in February, five percentage points above the year-earlier share. It seems clear that the surge in new car sales (up more than 40% over the past two months and more than 25% over a six month period compared with prior-year levels) is the major causal factor.

Distillates

The level of distillate supplied decreased minimally (13 MBD - 0.5%) compared with February 1983 levels. Based on preliminary data, this February has been the warmest since 1976, with temperatures averaging about 10% warmer than last year and 16% warmer than normal. When adjusted for the temperature variation, February deliveries actually increased about 70 MBD over last year's level. The continued strength of rail and truck traffic, both of which have shown substantial increases over prior-year levels (up an estimated 10% and 15%, respectively, in January), should have added some 150-200 MBD to distillate demand. One must, therefore, conclude that January's substantial buildup of inventories in secondary and tertiary storage was reversed in February and depressed February delivery levels by approximately 100 MBD.

Residual Fuel Oil

Residual fuel oil rose 39 MBD (2.5%) over last year's level. Residual fuel oil market segments seem to be experiencing differing degrees of adjustments to market conditions and changes in the economy. Deliveries to electric utilities, while for 1983 as a whole still below 1982, showed improvement over prior-year levels during the latter part of the year. This, however, was mainly the result of an unusually hot summer and extremely cold December when readily-available residual fuel oil often was the incremental fuel. It does not yet seem to reflect the substantial strengthening of electricity demand, which has risen an estimated 7% since the beginning of the year over the corresponding 1983 period. Likewise, the drop in bunker fuel demand slackened considerably in the second half of 1983, resulting in an eight-point decrease in the 1983 decline rate to 11%. This rate is roughly in line with the 10% drop in 1983 U.S. export tonnage.

The remaining sectors, consisting of industrial and "other users" (mostly commercial customers) have continued to experience sizable losses. The industrial sector, about twice as large in volume as the "other user" category, may have borne the brunt of the decrease because of far more flexible fuel choices. The rise in residual fuel oil prices since last spring - at a time when natural gas prices have been stabilizing and some gas utilities have sought lower rates for industrial customers with fuel alternatives - may have contributed to some further erosion of residual fuel oil demand. Some drawdown has apparently also occurred in customer inventories, though these inventories are in any event not very large. Strong output growth in most major industry sectors using residual fuel oil should have offset some of the adverse factors cited above, but this to date apparently has not occurred.

With available indicators pointing to continued, though somewhat lessened, weakness in residual fuel oil demand, the February increase likely reflects continued adjustment of customer inventories.

Jet Fuel Kerosine

Jet fuel kerosine deliveries rose almost 15% over year-ago figures. Airline traffic continues to show gains. "Miles flown" in December were 5.0% above a year ago, and similar increases are likely to have occurred during the past two months. The size of the increase in deliveries, however, suggests continued adjustment in end user inventories.

(In millions of B/D)	FEBRUARY ESTIMATES			YEAR-TO-DATE ESTIMATES		
	1984	1983	% Change	1984	1983	% Change
—Total domestic products supplied	15.1	14.8	2.3	16.2	14.8	9.6
—Motor gasoline supplied	6.2	6.0	2.5	6.3	6.0	5.3
—Distillate fuel oil supplied	2.8	2.8	(0.5)	3.3	2.8	17.6
—Residual fuel oil supplied	1.6	1.6	2.5	1.7	1.6	10.1

PETROLEUM SUPPLY^{1/}

Total supply rose about 1.9 million barrels above year-earlier levels. This is mainly the result of substantially higher import levels. Imports rose more than 2.1 million barrels per day while domestic supply fell about 0.2 million barrels per day.

Production

Crude production fell 79 MBD or 0.9%. While Alaskan production was minimally ahead of last year, a slight erosion of lower 48 production occurred over the past three months. The current production level, however, is still almost 1.2 million barrels per day higher than would have been anticipated, had the production decline of the price-controlled seventies continued.

Imports

Imports surged to a near 2.1 million barrel per day increase in February over last year. However, last February's level, seasonally adjusted, was the lowest for the year, and about 1.2 million barrels per day below the average level of the preceding six months. The major reason for last year's low level was the uncertainty as to the degree and timing of impending downward adjustments in oil prices, signaled for some time prior to the actual change by falling spot market prices.

Both crude and product imports rose. Distillate imports alone, both as a result of colder weather in December and January and hesitancy early last year in product purchasing, are estimated to have risen almost 400 MBD over last year's level.

Residual fuel oil imports also continue to be relatively strong. While residual fuel oil demand has not recovered to any significant degree from its long downtrend, imports of residual fuel oil have fallen only about a third as much as domestic output since 1980. During the past two months, in fact, they have exceeded prior-year levels substantially. Prior-years' refinery upgrading investments have resulted in lowered residual fuel oil output.

Inventories

Inventories rose about 24 million barrels from January levels, while normally February shows a drawdown. February's refinery utilization rate rose by about ten percentage points over last year, reflecting the rising level of deliveries.

Gasoline inventories rose 11 million barrels, more than twice the average January-to-February increase, and are at a roughly-average 38 day supply level. Distillate inventories rose almost 11 million barrels, the first time in at least 30 years that distillate

inventories have risen in February. Abnormally warm weather, plus distributors' apparent desire to adjust inventories after January's higher level of purchases, were the apparent cause of this counter-seasonal change in primary inventories.

Refinery Output

Production data for the past two months reflect a pattern of quick response to extreme weather conditions. Distillate production rose almost 100 MBD in January over December levels and increased another 200 MBD in February, with the latter month about 700 MBD over last February's level. February's motor gasoline production was a mere 1% below December, and some 300 MBD above last February's. These production results demonstrate the flexibility of the refining system, with about half of the year-to-year increase in distillate production attributable to an increase of about 3% in distillate yield and the remainder to increased refinery input and related factors.

Exploration

The average count of active rigs continued to erode in February, falling about 7% from last month's level, seasonally adjusted, but rising about 11% over last February's level.

(In millions of B/D)	FEBRUARY ESTIMATES			YEAR-TO-DATE ESTIMATES		
	1984	1983	% Change	1984	1983	% Change
—Total supply	16.6	14.7	12.8	16.2	15.0	8.2
—Crude production ^{2/}	8.7	8.7	(0.9)	8.7	8.7	(0.3)
—Crude oil imports ^{3/4/}	3.2	2.1	53.9	3.1	2.4	27.7
—Product imports	2.4	1.4	67.2	2.2	1.4	55.1

Annual Imports Data

Preliminary year 1983 imports data are now available by country. While Saudi Arabian imports have taken on an increasingly prominent role in the U.S. imports picture in the second half of 1983, more than doubling its rate of exports to the United States early in the year, Mexico remained the #1 supplier throughout 1983. Full year results show Mexico with a 16.5% share of total imports compared with Saudi Arabia's 6.7%, fifth in line.

The table below compares preliminary 1983 results for the 10 leading importers with the 1982 roster:

1983			1982		
	mbd	% of Imports		mbd	% of Imports
1. Mexico	822	16.5	1. Mexico	685	13.4
2. Canada	543	10.9	2. Saudi Arabia	552	10.9
3. Venezuela	414	8.3	3. Nigeria	514	10.0
4. United Kingdom	380	7.6	4. Canada	482	9.4
5. Saudi Arabia	335	6.7	5. United Kingdom	456	8.9
6. Indonesia	335	6.7	6. Venezuela	412	8.1
7. Nigeria	292	5.9	7. Virgin Islands	316	6.2
8. Virgin Islands	282	5.7	8. Indonesia	248	4.9
9. Algeria	235	4.7	9. Neth. Antilles	175	3.4
10. Neth. Antilles	187	3.8	10. Algeria	170	3.3

1/ Total supply, i.e., production plus imports adjusted for net stock change is equal to total products supplied from primary storage. Total products supplied from primary storage less exports is equal to total domestic products supplied. Information contained in this report is derived from information published in the API Weekly Bulletin and is based on historical analysis of the industry. All data reflect the most current information available to the API and include all previously published revisions.

2/ Includes lease condensate.

3/ Beginning with January 1977, the U.S. Department of Energy began reporting crude oil imports as of the date of importation. Previously, this data, with the exception of Canadian crude imports, was reported as of the date it was received at the refinery. This change may affect both the level of crude oil imports and crude oil stocks. API estimates of these data may, therefore, differ slightly from those of the U.S. Department of Energy.

4/ API data do not include crude oil imported for the Strategic Petroleum Reserve (SPR) nor crude oil stocks held in the SPR (according to the U.S. Department of Energy, the SPR held approximately 387 million barrels as of February 29, 1984).

ESTIMATED UNITED STATES PETROLEUM BALANCE

(Daily Average in Thousands of 42 Gallon Barrels)

Products Supplied/Supply From Primary Storage	FEBRUARY			YEAR-TO-DATE		
	1984 ¹	1983 ²	% Change	1984 ^{3R}	1983 ²	% Change
Products Supplied:						
Total motor gasoline	6,171	6,022	2.5	6,317	6,001	5.3
Finished leaded motor gasoline*	2,517	2,765	(9.0)	2,608	2,694	(3.2)
Finished unleaded motor gasoline*	3,654	3,257	12.2	3,709	3,307	12.2
Naphtha-jet	209	236	(11.4)	213	209	1.9
Kerosine-jet	933	813	14.8	956	785	21.8
Distillate fuel oil	2,819	2,832	(0.5)	3,286	2,794	17.6
Residual fuel oil	1,607	1,568	2.5	1,729	1,571	10.1
All other oils ⁴	3,554	3,503	1.5	3,884	3,661	6.1
Reclassified ⁵	- 185	- 199	(7.0)	- 192	- 250	(23.2)
Total domestic products supplied	15,108	14,775	2.3	16,193	14,771	9.6
Exports	632	865	(26.9)	640	922	(30.6)
Total products supplied	15,740	15,640	0.6	16,833	15,693	7.3
Supply:						
Domestic production:						
Crude oil ⁶	8,662	8,741	(0.9)	8,669	8,698	(0.3)
Natural gas liquids	1,621	1,585	2.3	1,630	1,629	0.1
Other supply ⁷	729	876	(16.8)	614	806	(23.8)
Total domestic supply	11,012	11,202	(1.7)	10,913	11,133	(2.0)
Imports:						
Crude oil, total	3,187 ^{10/}	2,071 ^{10/}	53.9	3,080 ^{10/}	2,412 ^{10/}	27.7
Canadian	248	229	8.3	289	250	15.6
Other	2,939	1,842	59.6	2,791	2,162	29.1
Products, total	2,379	1,423	67.2	2,216	1,429	55.1
Residual fuel oil	1,018	632	61.1	926	663	39.7
Other	1,361	791	72.1	1,290	766	68.4
Total imports	5,566	3,494	59.3	5,296	3,841	37.9
Total supply	16,578	14,696	12.8	16,209	14,974	8.2
Stock change, all oils	+ 838	- 944	XXXX	- 624	- 719	XXXX
Refinery Operations						
Input to crude oil distillation units	12,248	11,000	11.3	11,983	11,222	6.8
Operable capacity	16,309	16,823	(3.1)	16,309	16,824	(3.1)
Refinery utilization (%) ⁸	75.1%	65.4%	14.8	73.5%	66.7%	10.2
Crude oil runs	12,010	10,635	12.9	11,745	10,863	8.1
Stocks (millions bbls.)	1984			1983 ²	% Change from ...	
	Feb. 29 ⁹	Jan. 31 ⁹		Feb. 28	Previous Month	Year Ago
Crude oil ^{10/}	337.3	344.6 ^{R/}		366.0	(2.1)	(7.8)
Unfinished oils	105.5	106.3 ^{R/}		108.3	(0.8)	(2.6)
Total motor gasoline**	235.7	225.1 ^{R/}		251.2	4.7	(6.2)
Finished leaded motor gasoline*	96.8	92.4 ^{R/}		104.5	4.8	(7.4)
Finished unleaded motor gasoline*	97.3	92.5 ^{R/}		102.9	5.2	(5.4)
Naphtha-jet	6.2	6.3		7.2	(1.6)	(13.9)
Kerosine-jet	33.1	31.0 ^{R/}		33.3	6.8	(0.6)
Distillate fuel oil	129.9	119.1 ^{R/}		147.4	9.1	(11.9)
Residual fuel oil	52.2	43.2 ^{R/}		53.1	20.8	(1.7)
All other oils	136.7	136.7 ^{R/}		159.2	-	(14.1)
Total all oils	1,036.6	1,012.3 ^{R/}		1,125.7	2.4	(7.9)

1/ Based on API estimated data converted to a monthly basis.

2/ Source: U.S. Department of Energy.

3/ Source: API.

4/ Includes crude losses.

5/ Beginning with January 1981, U.S. Department of Energy began using a new data collection system which encompasses a method to ascertain the amount of product reclassified during the production phase. So that there will be no double counting of these volumes, they are subtracted from total domestic products supplied.

6/ Includes lease condensate.

7/ Includes Unaccounted-for crude oil, Refinery input of other hydrocarbons, and Processing gain.

8/ Represents "Input to crude oil distillation units" as a percent of "Operable capacity."

9/ Derived by interpolating API weekly stocks data.

10/ Data do not include oil imported for the Strategic Petroleum Reserve (SPR) nor crude oil stocks held in the SPR.

R/ Revised.

* Included in motor gasoline.

** Includes finished leaded, finished unleaded, and motor gasoline blending components stocks.

API's WEEKLY STATISTICAL BULLETIN

The *Weekly Statistical Bulletin*, from which the *Monthly Statistical Report's* data are derived, has been published by API in some form since 1919; reporting on refinery operations and product stocks began in 1929. The estimates of refinery operations, industry inventories, and imports are based on weekly responses from approximately 200 companies. These companies report operations and production at refineries as well as crude oil and product stocks held at refineries, bulk terminals, and pipelines. Reports are also received on crude and product imports. The respondents currently represent more than 95 percent of refinery operations and refinery output of major products, from 72 to 93 percent of major product stocks, and about 80 percent of total petroleum imports. Every effort is made by API to keep its list of respondents, all of whom report voluntarily, up-to-date and representative of as large a segment of the industry as possible.

Data reported to API are expanded to represent the industry as a whole using as a reference point data published for prior months by the Department of Energy in the *Petroleum Supply Monthly*; DOE's data currently become available approximately two months after the close of the reporting month. Since all members of the primary sector are required to report to the Department of Energy, this data essentially represents the universe.

Weekly Statistical Bulletin data, converted to monthly form, are the main component of the *Monthly Statistical Report's* petroleum balance. In order to complete the balance, estimates are made for crude and NGL production, other domestic supply, and exports, as well as for products supplied, stocks, and imports of "other oils".

Both API and DOE product data are for the primary sector, that is, refineries, pipelines, and bulk terminals (terminals with storage capacity of 50,000 barrels or more or receiving products principally by tanker, barge, or pipeline). Since inventories outside the primary sector (such as wholesale, retail, and customer stocks) are not included, neither final sales nor consumption are measured directly. However, "product supplied from the primary sector", which in the long run should approximate final sales and consumption, can be calculated for a particular product as:

$$\text{product supplied} = \text{refinery output} + \text{imports} - \text{exports} - \text{stock change}.$$

Almost by definition, much of the week-to-week variation in API data is more a reflection of short-run operational developments than of longer-run trends. Such variation may be due to many factors. For example, scheduled and unscheduled maintenance, refinery turnaround, or even the effects of unusually cold weather, such as occurred in late December, can temporarily reduce operations at some refineries. The timing of ship arrivals may cause weekly variation in imports. Holders of stocks outside the primary system may replenish or draw down their inventories, and though this may increase or decrease the amount of "product supplied from the primary sector", actual retail sales or consumption may not have changed. Finally, short-run changes in demand can occur due to weather, holidays, and other factors.

When the short-run variations in supply (refinery output and imports) are paired with short-run changes in product leaving the primary sector, short-run variability of inventories as well is inevitable. This is hardly surprising, since one purpose of inventories is to serve as a buffer between the day-to-day and week-to-week fluctuations in these two sides of the petroleum balance. In Exhibits I through VI, *Weekly Statistical Bulletin* data for refinery output, imports, and stock changes of gasoline and distillate are compared with a centered, 5-week moving average of the same data. As the figures show, weekly data can display considerable variation around the average, and even the moving average is often less smooth than an analyst looking for trends might hope. However, this does not mean that weekly data do not have meaning, but rather that week-to-week changes are often only of short-run significance.

In addition to being most meaningfully viewed in terms of the short run, the weekly data are most readily interpreted in the context of industry developments as a whole. Individual series taken alone often do not provide enough information to be easily interpreted.

For example, statistical tests indicate that, after accounting for normal seasonal variation, 1983 week-to-week gasoline and distillate stock changes taken by themselves were indistinguishable from a random series. This conclusion is based on application of the runs test, in which the number of runs of negative and positive signs is compared with the number expected if the series were random. If the divergence between expected and actual runs is large enough, the hypothesis that the series is random is rejected.

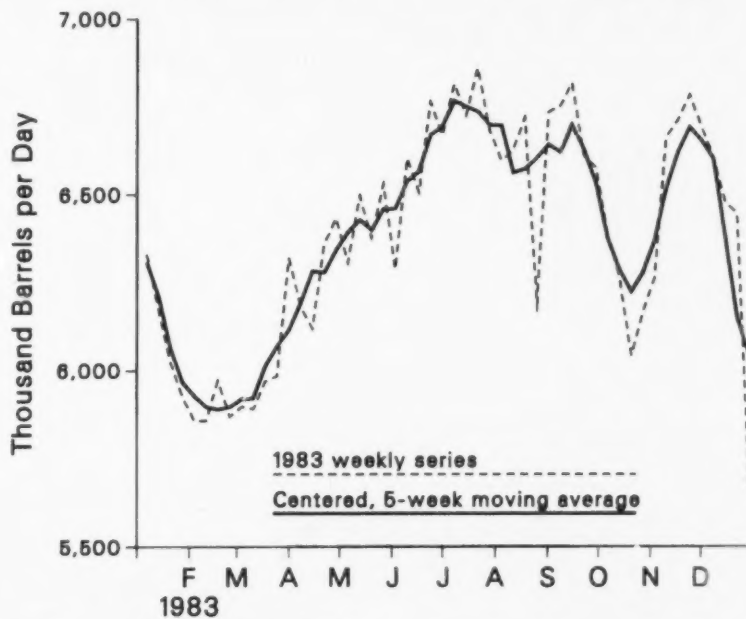
The test was applied (at a 90% significance level) to week-to-week changes in stocks, refinery output, and imports of motor gasoline and distillate for 1983, all of which were adjusted for normal seasonal variations. Neither motor gasoline nor distillate week-to-week stock changes, taken alone, showed a statistically significant departure from randomness. The output and import series either did not pass the runs test or showed some other indication of nonrandomness. Nevertheless, statistical tests indicate that 20% or less of the weekly variation in 1983 for these series could be explained by the prior week's change.

Of course, gasoline and distillate stock changes (or changes in any other weekly series) are not really entirely random, since they can be at least partially explained by weather, temporary inactivation of particular refineries, economic conditions, and other factors. Rather, the message of these statistical tests is that the series cannot be easily interpreted without taking this context into full account.

The conclusion to draw from this analysis is that week-to-week changes in industry data are most often only of short-run significance. For trends to become apparent, the data need to be examined over longer periods of time and in the context of other available data. To fulfill this need is one purpose of the *Monthly Statistical Report*.

EXHIBIT I

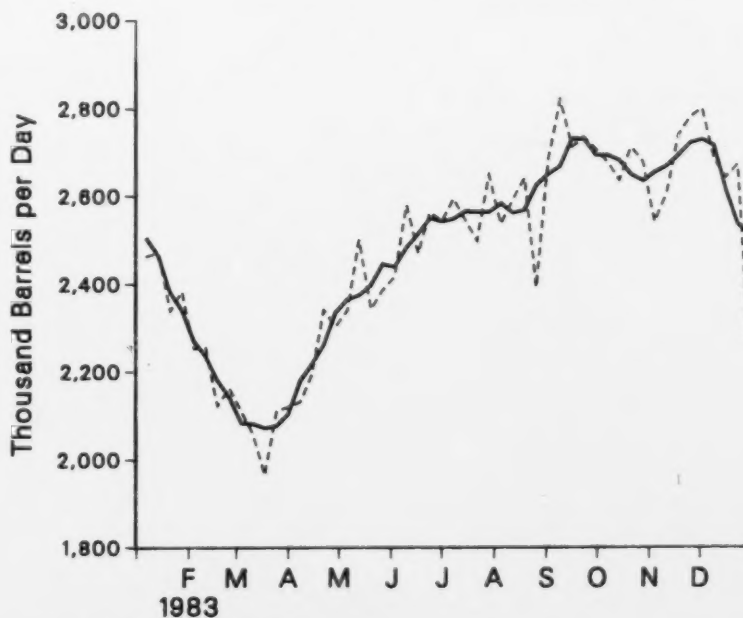
MOTOR GASOLINE OUTPUT



Source: American Petroleum Institute

EXHIBIT II

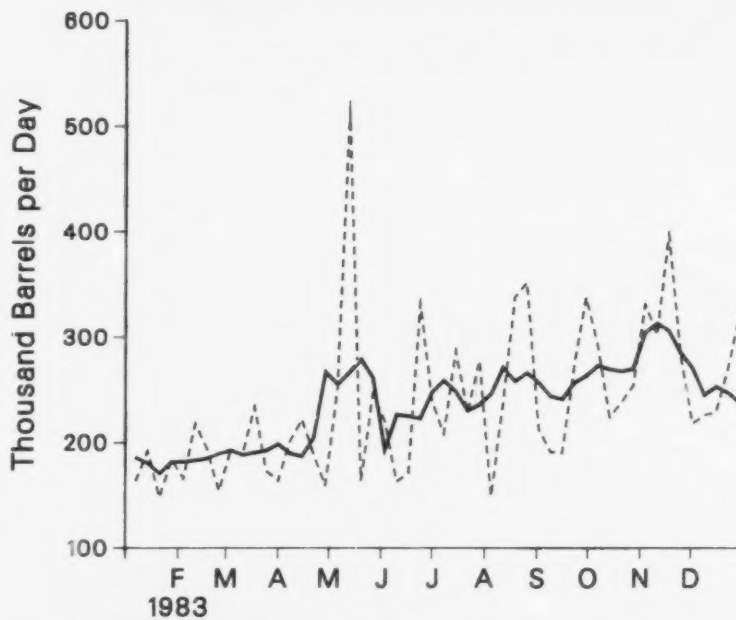
DISTILLATE OUTPUT



Source: American Petroleum Institute

EXHIBIT III

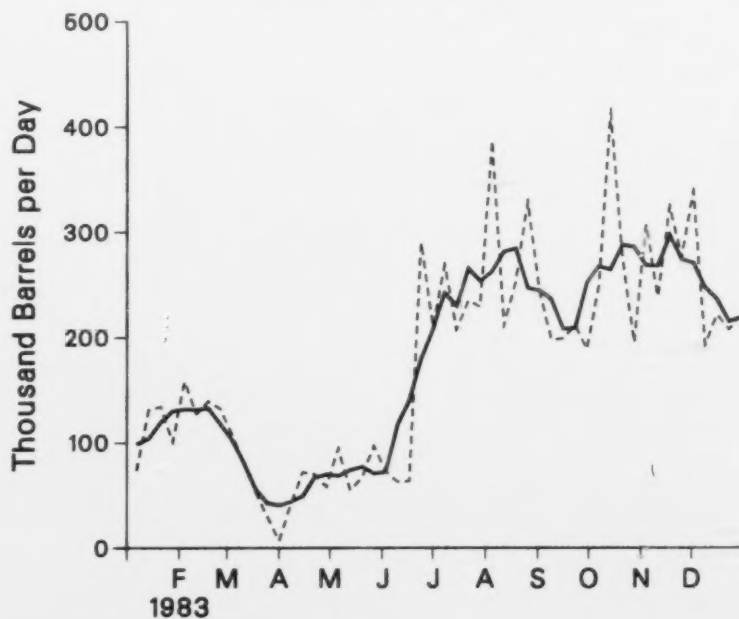
MOTOR GASOLINE IMPORTS



Source: American Petroleum Institute

EXHIBIT IV

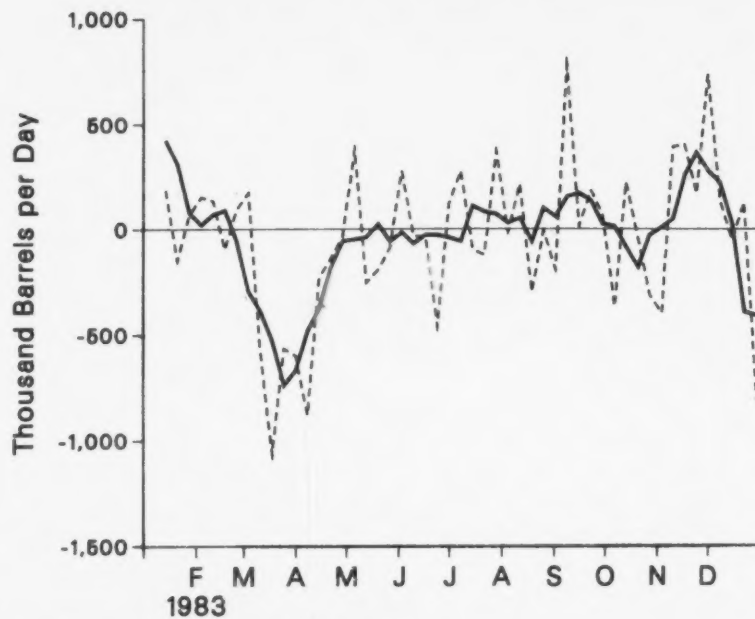
DISTILLATE IMPORTS



Source: American Petroleum Institute

EXHIBIT V

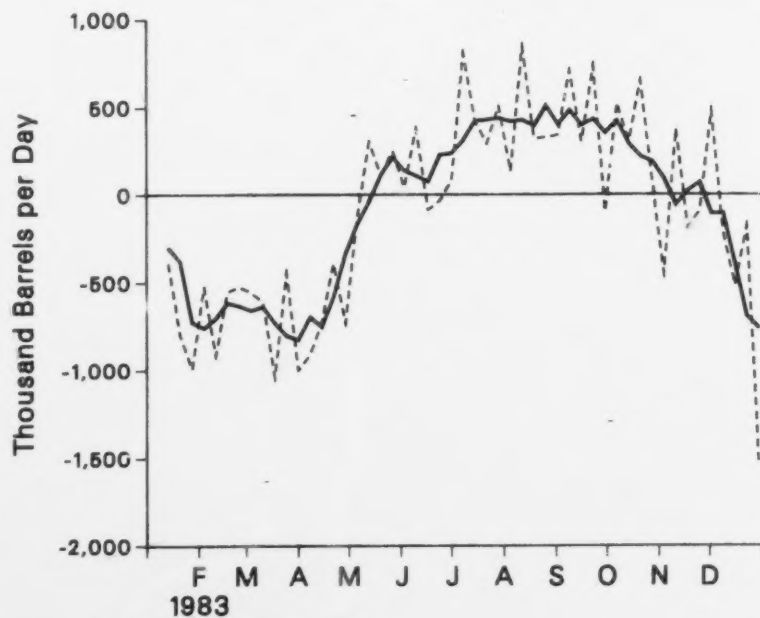
MOTOR GASOLINE STOCK CHANGE



Source: American Petroleum Institute

EXHIBIT VI

DISTILLATE STOCK CHANGE



Source: American Petroleum Institute